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E-D2CARP: A joint path and spectrum diversity based routing protocol with an optimized path selection for cognitive radio ad hoc networks (Conference Paper)

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Abstract

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Cognitive Radio (CR) is a new paradigm which offers a viable solution to deal with the spectrum shortage problem and enhance the spectrum utilization. In Cognitive Radio Ad Hoc Networks (CRAHNs), data routing is one of the most challenging tasks due to frequent topology changes and intermittent connectivity caused by the activity of Primary Users (PUs). This paper proposes a joint path and spectrum diversity based routing protocol with an optimized path selection for CRAHNs, referred to the Enhanced Dual Diversity Cognitive Ad-hoc Routing Protocol (E-D2CARP). The Expected Path Delay (EPD) routing metric used in the protocol for path decision is also introduced. The protocol utilizes the joint path and spectrum diversity and circumvents the PU regions during path establishment phase in order to make the transmission path less vulnerable to the impact of PU activities and provide efficient route recovery in presence of path failures resulting from PU activities. The performance evaluations are conducted through simulations using the NS-2 simulator. Simulation results obviously demonstrate that the E-D2CARP can achieve better performance in terms of average throughput, packet loss, average end-to-end delay, and average jitter as compared to the recently proposed D2CARP protocol in identical scenarios. © 2014 IEEE.

Author keywords

Cognitive radio ad hoc network | Joint path and spectrum diversity | Optimized path selection | PU region avoidance | Routing protocol

Indexed keywords

Engineering controlled terms: Ad hoc networks | Network routing | Routing protocols | Telecommunication networks

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(2017) Sensors (Switzerland)

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(2016) Journal of Network and Computer Applications

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(2015) Journal of Theoretical and Applied Information Technology

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Ad hoc routing protocol

Average end-to-end delays

Average throughput

Cognitive radio ad hoc networks (CRAHNs)

Cognitive radio Ad-Hoc networks

Intermittent connectivity

Path selection

Spectrum utilization

Engineering main heading: Cognitive radio

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References (14)

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1 Report of the spectrum efficiency working group
(2002) *Technical Report, Federal Communications Commission (FCC)*. Cited 458 times.
FCC's Spectrum Policy Task Force, November

2 Haykin, S.
Cognitive radio: Brain-empowered wireless communications
(2005) *IEEE Journal on Selected Areas in Communications*, 23 (2), pp. 201-220. Cited 7998 times.
doi: 10.1109/JSAC.2004.839380
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3 Akyildiz, I.F., Lee, W.-Y., Vuran, M.C., Mohanty, S.
NeXt generation/dynamic spectrum access/cognitive radio wireless networks: A survey
(2006) *Computer Networks*, 50 (13), pp. 2127-2159. Cited 3967 times.
doi: 10.1016/j.comnet.2006.05.001
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4 Akyildiz, I.F., Lee, W.-Y., Chowdhury, K.R.
CRAHNs: Cognitive radio ad hoc networks
(2009) *Ad Hoc Networks*, 7 (5), pp. 810-836. Cited 788 times.
doi: 10.1016/j.adhoc.2009.01.001
View at Publisher

Networks under critical conditions
Che-Aron, Z. , Abdalla, A.H. , Abdullah, K.
(2015) Research Journal of Applied Sciences, Engineering and Technology

FTCARP: A fault-tolerant routing protocol for cognitive radio ad hoc networks
Che-Aron, Z. , Abdalla, A.H. , Abdullah, K.
(2014) KSII Transactions on Internet and Information Systems

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5 Perkins, C.E., Belding-Royer, E.M., Das, S.R.
Ad hoc on-demand distance vector (AODV) routing
(2003) *RFC 3561, Internet Engineering Task Force (IETF)*. Cited 15 times.
July

6 Johnson, D.B., Hu, Y.-C., Maltz, D.A.
The dynamic source routing protocol (DSR) for mobile ad hoc networks for IPv4
(2007) *RCF 4728, Internet Engineering Task Force (IETF)*
February

7 Clausen, T.H., Jacquet, P.
Optimized link state routing protocol (OLSR)
(2003) *RFC 3626, Internet Engineering Task Force (IETF)*. Cited 23 times.
October

8 Perkins, C.E., Bhagwat, P.
Highly dynamic destination-sequenced distance-vector routing (DSDV) for mobile computers
(1994) *ACM SIGCOMM Computer Communication Review*, 24 (4), pp. 234-244. Cited 3651 times.
October

9 Cesana, M., Cuomo, F., Ekici, E.
Routing in cognitive radio networks: Challenges and solutions

(2011) *Ad Hoc Networks*, 9 (3), pp. 228-248. Cited 184 times.
doi: 10.1016/j.adhoc.2010.06.009

View at Publisher

10 Sengupta, S., Subbalakshmi, K.
Open research issues in multi-hop cognitive radio networks

(2013) *IEEE Communications Magazine*, 51 (4), art. no. 6495776, pp. 168-176. Cited 49 times.
doi: 10.1109/MCOM.2013.6495776

View at Publisher

11 Rahman, M.A., Caleffi, M., Paura, L.
Joint path and spectrum diversity in cognitive radio Ad-hoc networks

(2012) *Eurasip Journal on Wireless Communications and Networking*, 2012, art. no. 235. Cited 28 times.
doi: 10.1186/1687-1499-2012-235

View at Publisher

12 Cacciapuoti, A.S., Calcagno, C., Caleffi, M., Paura, L.
CAODV: Routing in mobile ad-hoc cognitive radio networks

(2010) *2010 IFIP Wireless Days, WD 2010*, art. no. 5657754. Cited 49 times.
ISBN: 978-142449229-9
doi: 10.1109/WD.2010.5657754

View at Publisher

13 (1995) *The Network Simulator: NS-2*. Cited 1093 times.
The Vint Project
http://www.isi.edu/nsnam/ns/index.html

14 Rocha, F.
(2012) *NS2 Visual Trace Analyzer*. Cited 10 times.
http://nsvisualtraceanalyzer.wordpress.com

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